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MC NL PT SE

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(54) **Electronic device with trackball user input**

(57) A portable radio telephone comprising a housing, a transceiver located in the housing, a controller connected to the transceiver, a display connected to the controller, and a user input device connected to the controller. The user input device comprises a trackball movably connected to the housing and at least one trackball

rotational position sensor connected to the controller for sensing rotational movement of the trackball. The sensor includes a roller which rides against an exterior surface of the trackball. The user input device is configured to provide biased stepwise movements of the roller as the trackball is rotated by a user.

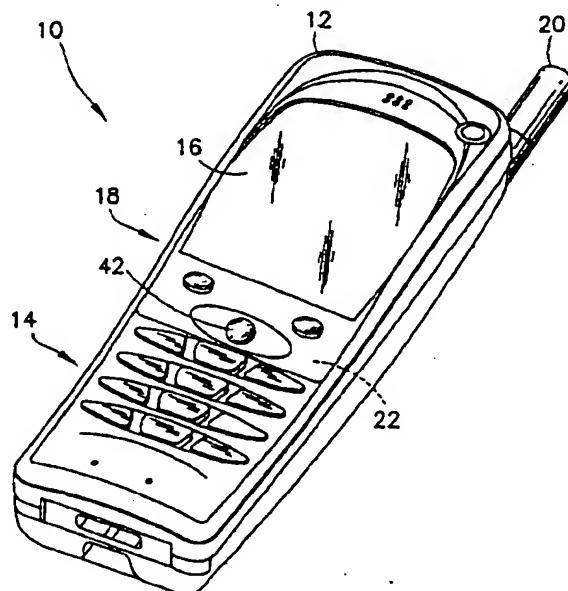


FIG. 1



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EUROPEAN SEARCH REPORT

Application Number

EP 00 30 6452

DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 03, 31 March 1999 (1999-03-31) & JP 10 320115 A (OMRON CORP), 4 December 1998 (1998-12-04) * abstract *	1-3,22, 26
Y	---	11-13,19
Y	WO 97 29582 A (SPRINT TELECOMMUNICATIONS VENT) 14 August 1997 (1997-08-14) * page 1, line 15 - line 20; claims 7,16; figures 1,3 *	11-13,19
X	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 02, 30 January 1998 (1998-01-30) & JP 09 282088 A (SONY CORP), 31 October 1997 (1997-10-31) * abstract *	1-3,22, 26
Y	---	11-13,19
Y	WO 98 48548 A (NOKIA OYJ ;TAPPURA KIRSI (FI); KIMMEL JYRKI (FI); NIEMINEN HANNU ()) 29 October 1998 (1998-10-29) * page 5, line 10 - line 22; claim 5; figures 3,4,9,10 *	11-13,19
E	WO 01 59556 A (NAKASE MASAKI ;YOKOJI SHIGERU (JP); FUKUMURA TOYOSHI (JP); MATSUSH) 16 August 2001 (2001-08-16) * abstract; figures *	1-4, 8-14, 18-22, 24-26
A	WO 97 25657 A (LEX COMPUTER & MANAGEMENT) 17 July 1997 (1997-07-17) * figures 7-10 *	4,14,25
	---	-/-
The present search report has been drawn up for all claims		
Place of search	Date of completion of the search	Examiner
BERLIN	21 January 2002	Durand, J
CATEGORY OF CITED DOCUMENTS		
X : particularly relevant if taken alone	T : theory or principle underlying the invention	
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Application Number

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 6452

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	WO 99 19861 A (CHANG TING HU; BIDIVILLE MARC A ; MERMINOD ANTOINE A (CH); LOGITECH) 22 April 1999 (1999-04-22) * page 2, line 33 - page 3, line 4; claims 2,3; figures 2,3 *	4,14,25	
X	"MOUSE WITH GEODESIC BALL" RESEARCH DISCLOSURE, KENNETH MASON PUBLICATIONS, HAMPSHIRE, GB, no. 303, 1 July 1989 (1989-07-01), page 519 XP000045833 ISSN: 0374-4353 * the whole document *	1-3,5,6, 22,23	
Y	---	11,15, 16,20	
X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 05, 31 May 1999 (1999-05-31) & JP 11 032113 A (KOKUSAI ELECTRIC CO LTD), 2 February 1999 (1999-02-02) * abstract *	21	
Y	---	11,15, 16,20	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
A	---	10	
X	DE 197 22 505 A (BOSCH GMBH ROBERT) 3 December 1998 (1998-12-03) * column 4, line 14 - line 31; claims; figure 1 *	1,5,10, 21-23	
Y	---	11,15,20	
X	GB 2 318 944 A (LUCENT TECHNOLOGIES INC) 6 May 1998 (1998-05-06) * page 4, line 5 - line 9; claims 5,6; figure 4 *	21	
Y	---	11,15,20	
A	---	10	
	-/-		
The present search report has been drawn up for all claims			

EFC FORM 03/82-PC4001

Place of search	Date of completion of the search	Examiner
BERLIN	21 January 2002	Durand, J
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T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document		



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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 00 30 6452

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-3, 9, 11-13, 19, 22, 26
trackball with tactile feedback using two orthogonal rollers
2. Claims: 4, 14, 25
trackball with polygonal rollers
3. Claims: 5-7, 15-17, 23
trackball with polygonal sphere
4. Claims: 8, 18, 24
trackball with movably biased rollers
5. Claims: 10, 20, 21
trackball with depression sensor



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 6452

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)						
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim							
X	FR 2 667 705 A (CEGELEC) 10 April 1992 (1992-04-10) * the whole document *	21							
A	EP 0 085 960 A (WICO CORP) 17 August 1983 (1983-08-17) * abstract; claims 1-9; figure 6 *	8,10,18, 20,24							
A	-----	8,10,24							
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)						
<p>The present search report has been drawn up for all claims</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Place of search</td> <td style="width: 33%;">Date of completion of the search</td> <td style="width: 34%;">Examiner</td> </tr> <tr> <td>BERLIN</td> <td>21 January 2002</td> <td>Durand, J</td> </tr> </table> <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons S : member of the same patent family, corresponding document</p>				Place of search	Date of completion of the search	Examiner	BERLIN	21 January 2002	Durand, J
Place of search	Date of completion of the search	Examiner							
BERLIN	21 January 2002	Durand, J							

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EP 00 30 6452

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21-01-2002

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
JP 10320115	A	04-12-1998	NONE		
WO 9729582	A	14-08-1997	AU	2267697 A	28-08-1997
			WO	9729582 A1	14-08-1997
JP 09282088	A	31-10-1997	NONE		
WO 9848548	A	29-10-1998	FI	971708 A	23-10-1998
			AU	7046798 A	13-11-1998
			EP	0985306 A2	15-03-2000
			WO	9848548 A2	29-10-1998
WO 0159556	A	16-08-2001	JP	2001216085 A	10-08-2001
			JP	2001255997 A	21-09-2001
			JP	2001265528 A	28-09-2001
			WO	0159556 A1	16-08-2001
WO 9725657	A	17-07-1997	US	5889670 A	30-03-1999
			AU	1567697 A	01-08-1997
			CA	2242840 A1	17-07-1997
			EP	0876639 A1	11-11-1998
			JP	2000503153 T	14-03-2000
			US	5889672 A	30-03-1999
			WO	9725657 A1	17-07-1997
			US	6195592 B1	27-02-2001
WO 9919861	A	22-04-1999	US	6157369 A	05-12-2000
			AU	1071399 A	03-05-1999
			CN	1239568 T	22-12-1999
			WO	9919861 A1	22-04-1999
			US	2001020932 A1	13-09-2001
JP 11032113	A	02-02-1999	NONE		
DE 19722505	A	03-12-1998	DE	19722505 A1	03-12-1998
			WO	9854670 A1	03-12-1998
			EP	0983573 A1	08-03-2000
GB 2318944	A	06-05-1998	US	5841849 A	24-11-1998
			CA	2216988 A1	30-04-1998
			JP	10190811 A	21-07-1998
FR 2667705	A	10-04-1992	FR	2667705 A1	10-04-1992
EP 0085960	A	17-08-1983	US	4404865 A	20-09-1983
			AU	1128183 A	18-08-1983

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 30 6452

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The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

21-01-2002

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP 0085960	A	CA	1192285 A1	20-08-1985
		EP	0085960 A1	17-08-1983
		JP	58149535 A	05-09-1983
		ZA	8300910 A	28-03-1984